

LAPORAN RESMI

WORKSHOP ADMINISTRASI JARINGAN

PRAKTIKUM 6 – DHCP SERVER



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PROGRAM STUDI D-IV TEKNIK INFORMATIKA
POLITEKNIK ELEKTRONIKA NEGERI SURABAYA

PERCOBAAN

1. Login sebagai root.
2. Catat IP Address dan nama host dari PC server dan juga client.

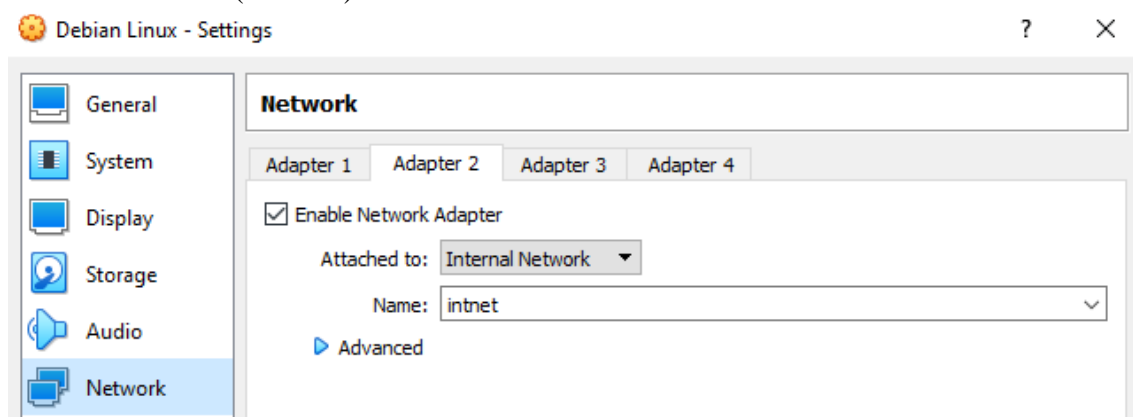
#ip addr

```
bimo@bimo: ~  
File Edit View Search Terminal Help  
root@bimo:/home/bimo# ip addr  
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000  
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00  
    inet 127.0.0.1/8 scope host lo  
        valid_lft forever preferred_lft forever  
    inet6 ::1/128 scope host  
        valid_lft forever preferred_lft forever  
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000  
    link/ether 08:00:27:3e:95:72 brd ff:ff:ff:ff:ff:ff  
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3  
        valid_lft 86374sec preferred_lft 86374sec  
    inet6 fe80::a00:27ff:fe3e:9572/64 scope link noprefixroute  
        valid_lft forever preferred_lft forever  
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000  
    link/ether 08:00:27:fb:ee:c6 brd ff:ff:ff:ff:ff:ff
```

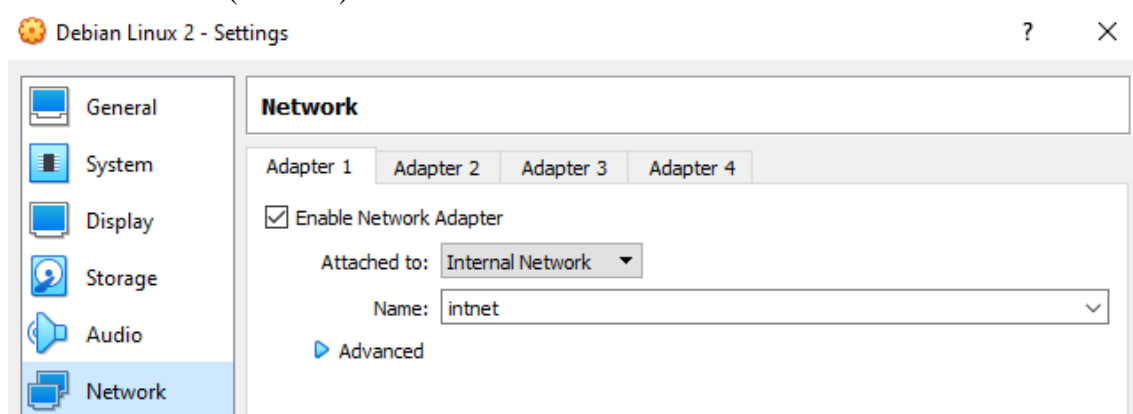
Jawab: IP Address PC client adalah 10.0.2.15/24.

3. Pastikan komputer server terhubung dengan komputer client.
Setting melalui menu Network pada VirtualBox. Pada PC server, atur Adapter 1 sebagai NAT dan Adapter 2 sebagai Internal Network. Pada PC client, atur Adapter 1 sebagai Internal Network.

- Linux Server (Linux 1)



- Linux Client (Linux 2)



Tambahkan konfigurasi untuk enp0s3 dan enp0s8. Atur enp0s3 sebagai dhcp dan enp0s8 sebagai static. IP address untuk enp0s8 bebas dan saya memilih acak IP 192.168.30.1 dengan netmask 255.255.255.0.

#nano /etc/network/interfaces

```
bimo@bimo: ~
File Edit View Search Terminal Help
GNU nano 3.2 /etc/network/interfaces Modified

# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

auto enp0s3
iface enp0s3 inet dhcp

auto enp0s8
iface enp0s8 inet static
address 192.168.30.1
netmask 255.255.255.0

^G Get Help   ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify
^X Exit       ^R Read File  ^\ Replace    ^U Uncut Text ^T To Spell
```

Hidupkan adapter enp0s3 dan enp0s8.

\$sudo ifup enp0s3

\$sudo ifup enp0s8

```
bimo@bimo: ~
File Edit View Search Terminal Help
bimo@bimo:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:3e:95:72 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic enp0s3
        valid_lft 86383sec preferred_lft 86383sec
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:fb:ee:c6 brd ff:ff:ff:ff:ff:ff
    inet 192.168.30.1/24 brd 192.168.30.255 scope global enp0s8
        valid_lft forever preferred_lft forever
```

#apt update

```
bimo@bimo: ~
File Edit View Search Terminal Help
root@bimo:/home/bimo# apt update
Hit:1 http://deb.debian.org/debian buster InRelease
Hit:2 http://security.debian.org/debian-security buster/updates InRelease
Hit:3 http://deb.debian.org/debian buster-updates InRelease
Hit:4 http://repo.mysql.com/apt/debian buster InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
66 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

4. Instalasi paket program DHCP.

#apt install isc-dhcp-server

```
bimo@bimo: ~  
File Edit View Search Terminal Help  
root@bimo:/home/bimo# apt install isc-dhcp-server  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following additional packages will be installed:  
  libirs-export161 libiscfg-export163 policycoreutils selinux-utils  
Suggested packages:  
  isc-dhcp-server-ldap  
The following NEW packages will be installed:  
  isc-dhcp-server libirs-export161 libiscfg-export163 policycoreutils selinux-utils  
0 upgraded, 5 newly installed, 0 to remove and 66 not upgraded.  
Need to get 1,616 kB of archives.  
After this operation, 6,539 kB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Get:1 http://deb.debian.org/debian buster/main amd64 libiscfg-export163 amd64 1:9.11.5.P4+dfsg-5.1+deb10u3 [264 kB]  
Get:2 http://deb.debian.org/debian buster/main amd64 libirs-export161 amd64 1:9.11.5.P4+dfsg-5.1+deb10u3 [237 kB]  
Get:3 http://deb.debian.org/debian buster/main amd64 isc-dhcp-server amd64 4.4.1-2 [548 kB]  
Get:4 http://deb.debian.org/debian buster/main amd64 selinux-utils amd64 2.8-1+b1 [101 kB]  
Get:5 http://deb.debian.org/debian buster/main amd64 policycoreutils amd64 2.8-1 [467 kB]  
Fetched 1,616 kB in 1s (1,748 kB/s)
```

Pada awal instalasi, service DHCP pasti mengalami failure karena DHCP belum terkonfigurasi.

```
bimo@bimo: ~  
File Edit View Search Terminal Help  
● isc-dhcp-server.service - LSB: DHCP server  
   Loaded: loaded (/etc/init.d/isc-dhcp-server; generated)  
   Active: failed (Result: exit-code) since Thu 2021-04-08 12:38:25 +08; 77ms ago  
   Docs: man:systemd-sysv-generator(8)  
   Process: 2480 ExecStart=/etc/init.d/isc-dhcp-server start (code=exited, status=1/FAILURE)  
  
Apr 08 12:38:23 bimo dhcpcd[2493]: bugs on either our web page at www.isc.org or in the README file  
Apr 08 12:38:23 bimo dhcpcd[2493]: before submitting a bug. These pages explain the proper  
Apr 08 12:38:23 bimo dhcpcd[2493]: process and the information we find helpful for debugging.  
Apr 08 12:38:23 bimo dhcpcd[2493]:  
Apr 08 12:38:23 bimo dhcpcd[2493]: exiting.  
Apr 08 12:38:25 bimo isc-dhcp-server[2480]: Starting ISC DHCPv4 server: dhcpcdcheck syslog for diagnostic  
s. ... failed!  
Apr 08 12:38:25 bimo isc-dhcp-server[2480]: failed!  
Apr 08 12:38:25 bimo systemd[1]: isc-dhcp-server.service: Control process exited, code=exited, status=1/  
FAILURE  
Apr 08 12:38:25 bimo systemd[1]: isc-dhcp-server.service: Failed with result 'exit-code'.  
Apr 08 12:38:25 bimo systemd[1]: Failed to start LSB: DHCP server.  
Processing triggers for man-db (2.8.5-2) ...  
Processing triggers for libc-bin (2.28-10) ...  
Processing triggers for systemd (241-7-deb10u6) ...
```

Memilih adapter mana yang ingin digunakan untuk dhcp server. Saya memilih enp0s8.

#nano /etc/default/isc-dhcp-server

```
bimo@bimo: ~
File Edit View Search Terminal Help
GNU nano 3.2 /etc/default/isc-dhcp-server Modified

# Defaults for isc-dhcp-server (sourced by /etc/init.d/isc-dhcp-server)

# Path to dhcpd's config file (default: /etc/dhcp/dhcpd.conf).
#DHCPDv4_CONF=/etc/dhcp/dhcpd.conf
#DHCPDv6_CONF=/etc/dhcp/dhcpd6.conf

# Path to dhcpd's PID file (default: /var/run/dhcpd.pid).
#DHCPDv4_PID=/var/run/dhcpd.pid
#DHCPDv6_PID=/var/run/dhcpd6.pid

# Additional options to start dhcpd with.
# Don't use options -cf or -pf here; use DHCPD_CONF/ DHCPD_PID instead
#OPTIONS=""

# On what interfaces should the DHCP server (dhcpd) serve DHCP requests?
# Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACESv4="enp0s8"
INTERFACESv6=""

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify      ^C Cur Pos
^X Exit          ^R Read File    ^\ Replace      ^U Uncut Text   ^T To Spell     ^_ Go To Line
```

5. Konfigurasi /etc/dhcp3/dhcpd.conf. Atur subnet sesuai jaringan anda.

#nano /etc/dhcp/dhcpd.conf

- a. Uncommand line “authoritative”;

```
bimo@bimo: ~
File Edit View Search Terminal Help
GNU nano 3.2 /etc/dhcp/dhcpd.conf Modified

ddns-update-style none;

# If this DHCP server is the official DHCP server for the local
# network, the authoritative directive should be uncommented.
authoritative;

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify      ^C Cur Pos
^X Exit          ^R Read File    ^\ Replace      ^U Uncut Text   ^T To Spell     ^_ Go To Line
```

- b. Konfigurasi untuk DHCP server

Data DHCP server pada user bimo.

IP	: 192.168.30.1
Subnet	: 192.168.30.1
Netmask	: 255.255.255.0
Range	: 192.168.30.1 192.168.30.254
Router	: 192.168.30.1
Broadcast Address	: 192.168.30.255

Data konfigurasi

Subnet : 192.168.30.0
Netmask : 255.255.255.0
Range : 192.168.30.2 192.168.30.255
Router : 192.168.30.1
Broadcast Address : 192.168.30.255

```
bimo@bimo: ~
File Edit View Search Terminal Help
GNU nano 3.2 /etc/dhcp/dhcpd.conf Modified

# option routers rtr-239-32-1.example.org;
#}

# A slightly different configuration for an internal subnet.
subnet 192.168.30.0 netmask 255.255.255.0 {
    range 192.168.30.2 192.168.30.254;
    option domain-name-servers ns1.internal.example.org;
    option domain-name "internal.example.org";
    option routers 192.168.30.1;
    option broadcast-address 192.168.30.255;
    default-lease-time 600;
    max-lease-time 7200;
}

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify      ^C Cur Pos
^X Exit          ^R Read File    ^\ Replace      ^U Uncut Text   ^T To Spell     ^_ Go To Line
```

6. Restart DHCP service setiap ada perubahan konfigurasi.

#systemctl restart isc-dhcp-server.service

#systemctl status isc-dhcp-server.service

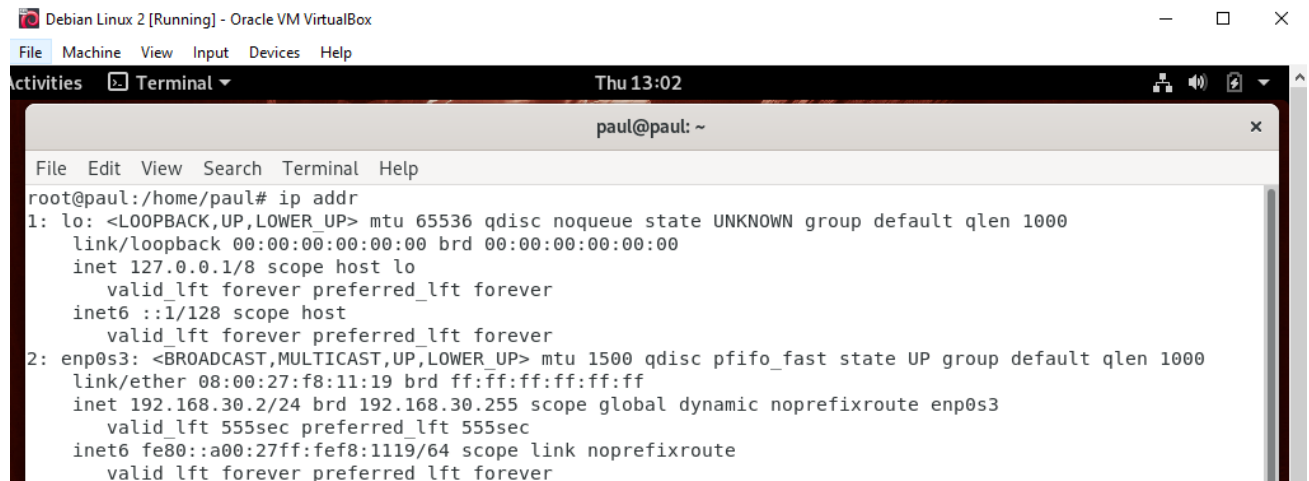
```
bimo@bimo: ~
File Edit View Search Terminal Help
● isc-dhcp-server.service - LSB: DHCP server
   Loaded: loaded (/etc/init.d/isc-dhcp-server; generated)
   Active: active (running) since Thu 2021-04-08 12:52:35 +08; 55s ago
     Docs: man:systemd-sysv-generator(8)
  Process: 2867 ExecStart=/etc/init.d/isc-dhcp-server start (code=exited, status=0/SUCCESS)
    Tasks: 1 (limit: 2306)
   Memory: 4.8M
    CGroup: /system.slice/isc-dhcp-server.service
            └─2880 /usr/sbin/dhcpd -4 -q -cf /etc/dhcp/dhcpd.conf enp0s8

Apr 08 12:52:32 bimo systemd[1]: Starting LSB: DHCP server...
Apr 08 12:52:33 bimo isc-dhcp-server[2867]: Launching IPv4 server only.
Apr 08 12:52:33 bimo dhcpd[2880]: Wrote 0 leases to leases file.
Apr 08 12:52:33 bimo dhcpd[2880]: Server starting service.
Apr 08 12:52:35 bimo isc-dhcp-server[2867]: Starting ISC DHCPv4 server: dhcpd.
Apr 08 12:52:35 bimo systemd[1]: Started LSB: DHCP server.
~
~
lines 1-16/16 (END)
```

7. Buka PC client dan cek IP Addressnya.

#ip addr

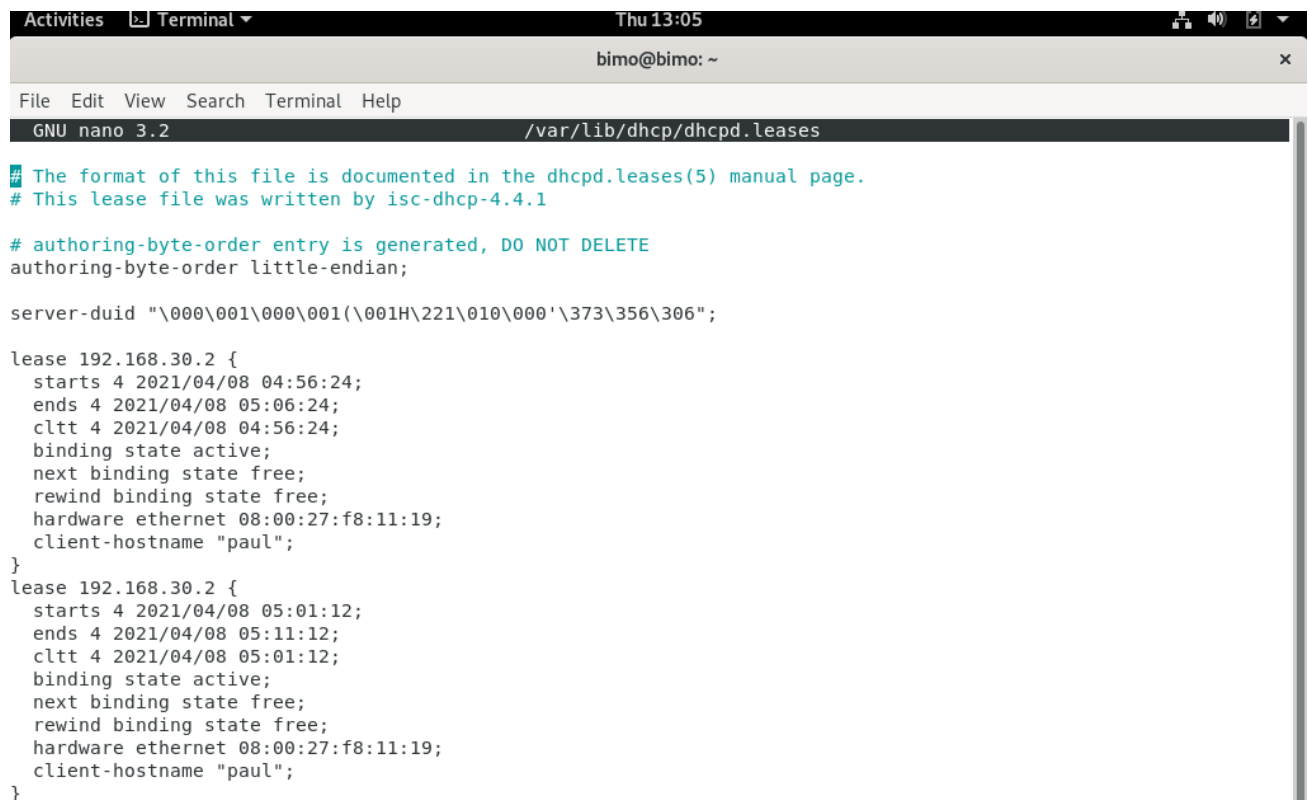
DHCP server akan mengalokasikan salah satu IP dari range 192.168.30.2 sampai 192.168.30.255. Pada percobaan, IP PC client adalah 192.168.30.2/24.



```
Debian Linux 2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
activities Terminal Thu 13:02
paul@paul: ~
File Edit View Search Terminal Help
root@paul:/home/paul# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:f8:11:19 brd ff:ff:ff:ff:ff:ff
    inet 192.168.30.2/24 brd 192.168.30.255 scope global dynamic noprefixroute enp0s3
        valid_lft 555sec preferred_lft 555sec
    inet6 fe80::a00:27ff:fe8:1119/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

Untuk melihat hasil client yang terkoneksi dengan DHCP server, bisa dilihat dari file /var/lib/dhcp/dhcpd.leases pada PC server.

#nano /var/lib/dhcp/dhcpd.leases



```
Activities Terminal Thu 13:05
bimo@bimo: ~
File Edit View Search Terminal Help
GNU nano 3.2 /var/lib/dhcp/dhcpd.leases
# The format of this file is documented in the dhcpd.leases(5) manual page.
# This lease file was written by isc-dhcp-4.4.1

# authoring-byte-order entry is generated, DO NOT DELETE
authoring-byte-order little-endian;

server-uid "\000\001\000\001(\001H\221\010\000'\373\356\306";

lease 192.168.30.2 {
    starts 4 2021/04/08 04:56:24;
    ends 4 2021/04/08 05:06:24;
    cltt 4 2021/04/08 04:56:24;
    binding state active;
    next binding state free;
    rewind binding state free;
    hardware ethernet 08:00:27:f8:11:19;
    client-hostname "paul";
}
lease 192.168.30.2 {
    starts 4 2021/04/08 05:01:12;
    ends 4 2021/04/08 05:11:12;
    cltt 4 2021/04/08 05:01:12;
    binding state active;
    next binding state free;
    rewind binding state free;
    hardware ethernet 08:00:27:f8:11:19;
    client-hostname "paul";
}
```

PC client sudah terkoneksi dengan PC server melalui DHCP server.